

**RETROSPECTIVE STUDY OF NEUROPARALYTIC SNAKE ENVENOMATION IN A TERTIARY CARE HOSPITAL OF CHHATTISGARH**Rakesh Nigam<sup>1</sup>, D. Kosam<sup>2</sup>, Miltan Debbarma<sup>3</sup>, Madhumita Murthy<sup>4</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT: AIMS:** To study the clinical profile and outcome of neuroparalytic snake envenomation in a tertiary care hospital of Chhattisgarh. **METHODS:** This study is a retrospective, study including 165 patients of both sexes, who presented with history of snake bite or suspicion of snake bite. It was carried out at the Intensive care unit (ICU) of a Medical College hospital of Chhattisgarh during the period of January 2011 to December 2014. **RESULTS:** During period of 4 years, 165 cases of neuroparalytic snake envenomation were admitted in the ICU ward, out of which, 65 cases (39.40%) were of cobra and 100(60.60%) cases were of krait bite. 58(35.15%) cases required ventilatory support. Bites were more common in males. Male: female ratio was 5:3. Maximum cases occurred during the monsoon season and involved the lower limbs. Ptosis was the chief neurotoxic feature. Cellulitis as a complication was observed in most of the cases of cobra bite. Polyvalent Anti Snake Venom (ASV) was used, in a mean dose of 22 vials, as specific treatment. Deaths were reported in patients who reported late to the hospital with a mortality rate of 3.03%. No long term morbidity was observed. **CONCLUSIONS:** Snakebites are common in the rural population of developing countries like ours. There is a need to aware the public and medical staff about the complication of snakebite and benefit of early reporting to hospital.

**KEYWORDS:** Snake bite, Envenomation, Anti Snake Venom.

**INTRODUCTION:** Snake bite which is an important cause of death in rural patients, in developing countries, is a neglected public health problem.<sup>[1,2]</sup> In India around 2 lakh people are bitten by snakes and about 50,000 deaths occur per year. Chhattisgarh is one of the State in India having high prevalence of snake bite death.<sup>[3]</sup> The actual number of snake bites cases may be much higher as majority of cases occurring in rural and tribal hilly area remained unreported. In Chhattisgarh common poisonous snakes are Cobra, Krait, Russell's viper, Saw Scaled Viper. This retrospective, descriptive study was aimed at ascertaining demography, clinical profile, complications and outcome in patients of neuroparalytic snake envenomation.

**SUBJECTS AND METHODS:** The present retrospective study was carried out in ICU wards of Chhattisgarh Institute of Medical Sciences (CIMS), Bilaspur, Chhattisgarh, India. During January 2011 to December 2014 a total of 165 cases of neuroparalytic snake bite were admitted in I.C.U wards. The records of snakebite victims were screened. A detailed information regarding demographic and epidemiological parameters such as age, sex, residence, site of bite and place of bite, type of snake, clinical profile, treatment and outcome were recorded. Time interval to reach the health facility after snake bite was also noted. Patients who absconded or had incomplete record were excluded from the study. Data collected were statistically analyzed.

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**RESULTS:** During the study period 165 cases of neuromuscular snake bite were admitted to ICU ward of CIMS. Out of which 65(39.40%) cases were of cobra bite and 100(60.60%) cases were of krait bite. Maximum number of victims 101(61.21%) were male and male-female ratio was 5:3 (Figure 1). Most of the patients were young with the mean age of 31.59 years (Range: 13-75years). Lower limbs were involved in maximum number of 120(72.72%) cases followed by Upper limbs (n=40, 24.24%) and trunk (n=3, 1.81%). Maximum number of patients were admitted in the monsoon (June-September) season [Table 1].

Sr. No.	Characteristic	Value
<b>1</b>	<b>Age</b>	
	Mean	31.59yrs
	Range	13-74
<b>2</b>	<b>Gender</b>	
	Male	101
	Female	64
<b>3</b>	<b>Site of Bite</b>	
	Lower Limb	120(72.72%)
	Upper Limb	40(24.24%)
	Head & Face	3(1.81%)
	Trunk	2(1.21%)
<b>4</b>	<b>Locality</b>	
	Rural	128(77.58%)
	Urban	37(22.42%)
<b>5</b>	<b>Seasonal Variation</b>	
	Monsoon(June-Sept)	121(73.33%)
	Winter(Oct.-Feb)	21(12.72%)
	Summer(March-May)	23(13.93%)
<b>6</b>	<b>Type of snake</b>	
	Krait	100(60.60%)
	Cobra	65(39.40%)
<b>7</b>	<b>Total No. of Patient</b>	165

**Table 1: Demographic profile of neuromuscular Snake Bite**

Signs of envenomation were present in all patients. Mild to severe ptosis was the chief neurotoxic feature observed in all 100 cases of krait and 65cases of cobra bite patients. Other Systemic manifestations observed in neuromuscular snake bite were dysphagia, dysphonia, limb weakness, cellulitis and respiratory failure. Cellulitis was observed in all 65cases of cobra bite patients and was absent in krait bite patient. Respiratory failure was present in 38 cases of krait and 20 patients of cobra bite. [Table 2].

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Sr. No.	Clinical Feature	No. of Pt.	Percentage %
1	Ptosis	165	100%
2	Dysphasia	90	54.55%
3	Dysphonia	72	43.63%
4	Cellulitis	65	39.40%
	Krait	0	0%
	Cobra	65	39.40%
5	Quardriparesis	62	37.58%
6	Respiratory Failure	58	35.15%

**Table 2: Clinical feature of neuroparalytic Snake Bite**

Sr. No.	Admission to Hospital	No. of Pt.	Ventilatory Support needed
1	< 6 Hours	60(36.36%)	13(21.66%)
2	6-12 Hours	80(48.48%)	30(37.5%)
3	> 12 Hours	25(15.15%)	15(60%)
	<b>Total</b>	<b>165</b>	<b>58(36.15%)</b>

**Table 3: Admission to Hospital and respiratory Failure**

Most of the patients (n=140, 84.84%) were brought to the hospital within the first twelve hours of the bite. Total 58(35.15%) patients required ventilatory supports. Out of 60(36.36)% cases, who were admitted to hospital within 6 hours, only 13(21.66%) cases required ventilatory support [Table 3]. Mean duration of ventilatory supports required for cobra bite patients was 2.41 days and krait bite patients was 4.62 days. Two patients in cobra and six patients in krait group, were required more than three days of ventilatory supports, developed pneumonitis.

Sr. No.	Characteristics	Value
<b>1</b>	<b>Dose of ASV</b>	
	Mean	22
	Range	10 to 52
<b>2</b>	<b>Length of Hospital Stay (days)</b>	
	Mean	3.87
	Range	2 to 13
<b>3</b>	<b>Mean length of Ventilatory support</b>	
	Krait	4.62
	Cobra	2.41
<b>4</b>	<b>Mortality</b>	
	Cobra bite	2(1.21%)
	Krait bite	3(1.81%)
	Total	5(3.03%)

**Table 4: Clinical Profile**

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All patients received Anti Snake Venom (ASV) as a specific treatment. The mean dose of antivenom given for neuroparalytic snakebite was 22vials (Range-10 to 52 vials). The mean duration of hospital stay was 3.87 days (range=2-13days). Five patients died, in which two were from cobra and three patients were from krait group, giving a mortality rate of 3.03%.All died patient came to hospital after 12 hours of snakebite and required ventilatory supports. Three patients in kraits and one patient in cobra group died due to ventilator associated pneumonitis and one patients of cobra bite died due to hypoxic encephalopathy.

**DISCUSSION:** Indian poisonous snakes belong to the elapid family of the cobra and krait and the viperid family of the Russel's viper and the saw scaled viper. Envenomation due to cobra and krait bites causes paralysis of the ocular, bulbar, and limb girdle muscles whereas viper bites mainly cause bleeding from muco-cutaneous sites, hemolysis, acute renal failure, and occasionally shock.<sup>(4,5)</sup>

Snakebites occur mostly in people of rural and tribal hilly areas, labourer and farmers working in fields. In our study most (n-128, 77.58%) of the snakebites victims were from rural areas. Incidence was more in male (101, 61.21%) as compared to female (n-64, 38.78%) patients. Similar finding were noted in many previous studies.<sup>(6,7,8)</sup> However some researcher reported female predominance in their area.<sup>(9)</sup> Incidence of snakebite was more in younger age group. Mean age of victims in our study was 31.59 years, probably due to the fact that younger population are more ambulant in nature.<sup>(7,10)</sup>

In our study lower limbs were involved in maximum number (n-120, 72.72%) of cases followed by upper limb, trunk, head and neck. Bites on the lower limbs occur usually due to the accidental stamping of a snake while working, while bites on the upper limbs occur because of accidental contact with snakes while trying to hold the grass during harvesting.<sup>(9)</sup>

In the present study there was a higher incidence (n-121, 73.33%) of snakebites during the monsoon season. Most snakebite in Chhattisgarh occurs during the monsoon season because farmers of the Chhattisgarh have to work in the fields flooded with water to grow rice during the rainy season. Also Flooding of the habitat of snakes and their prey govern contact with humans.<sup>(6)</sup>

Most neuroparalytic snakebites in our study showed systemic signs of envenomation because the patients who developed sign of envenomation are only referred to us. The neuroparalytic symptoms seen were in descending order was ptosis, dysphagia, dysphonia, limb weakness, and respiratory failure. In our study all neuroparalytic snake bite patient (cobra and Krait) having ptosis while cellulitis was present only in cobra bite patient. It can be an important differentiating clinical feature between cobra and krait bite, rarely Russell viper bite may present with ptosis and cellulitis.<sup>(11,12)</sup>

Treatment for snakebite patient is local care of the bitten site and anti-snake venom (ASV). In a study on Snake envenomation in a north Indian hospital Sharma N found that the mean dose of antivenom used for neuroparalytic snakebite was 51.2 vials (Range=5-190 vials) and 32 vials (Range=1-130 vials) for viper bites. In our ICU all patients received ASV and the mean ASV used for neuroparalytic snake bite was 22 vials which was nearer to the recommended dose of National snake bite management protocol 2008 (India).<sup>(13)</sup> Agarwal R and others observed that Low dose of snake antivenom is as effective as high dose in patients with severe neurotoxic snake envenomation.<sup>(14,15)</sup>

As seen in our study, 66.66 % patients presented beyond 6 hours after the bite. Due to delay in seeking treatment the condition of the patient has deteriorated and as observed in our study all the 5 mortalities have occurred in patients presenting beyond 6 hours of the bite. This delay in arrival can

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also be attributed to a lack of awareness of the hazards of snakebite, an unrelenting belief in the traditional system of medicines, and a lack of proper primary healthcare facilities.

Our institute is a government organization and all the treatment including ASV and intensive care are provided by free of cost to the snake bite victims. Average hospital stay in our study was 3.87 days and significant number of patient remain admitted for more than a week for treatment leading to manpower loss to society and financial loss to family due to lack of income as per patient source. In case patient died there is total loss of financial supports to family leading long term negative impact on the family and society as well.

**Limitations:** A retrospective study was one of the limitations because only available data can be used for analysis.

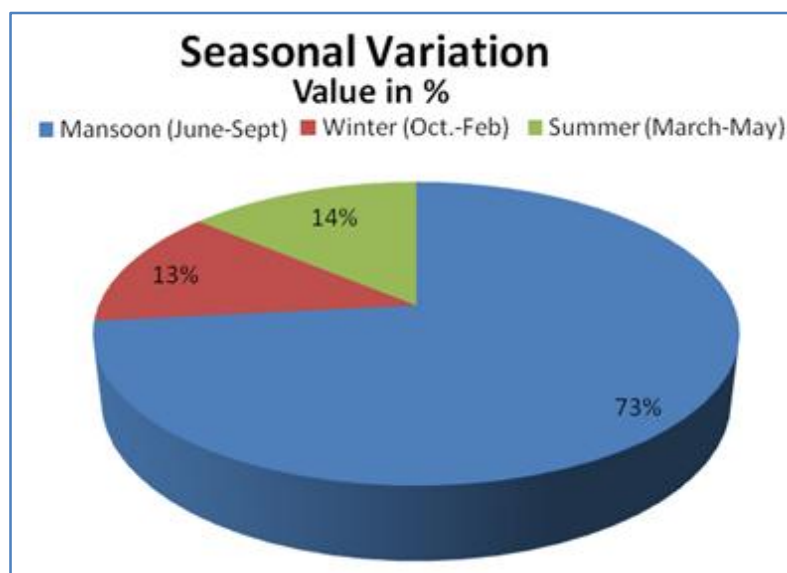
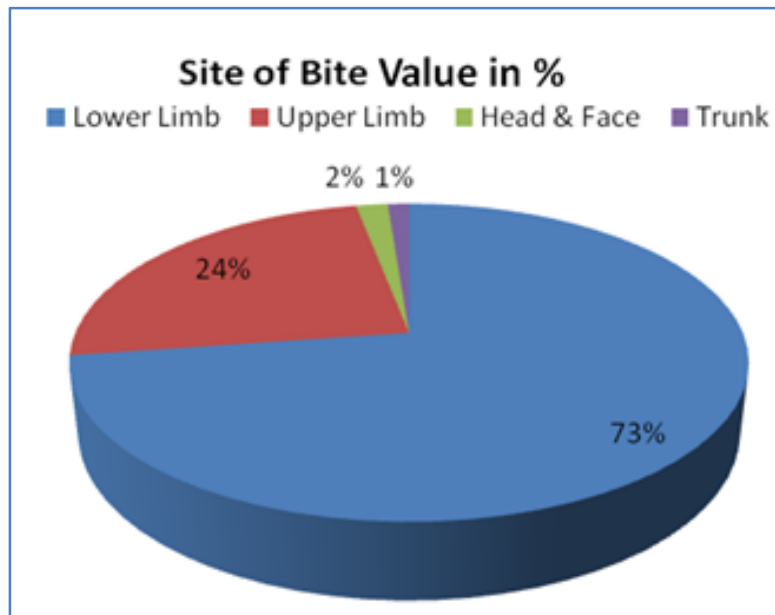
**CONCLUSION:** In conclusion “neurotoxic snake bite show a good outcome if effective treatment is staled in time, usually without any morbidity and mortality”. The outcome worsens in case of delay in treatment. There is a need to aware the public and medical staff about the complication of snakebite and benefit of early reporting to hospital.

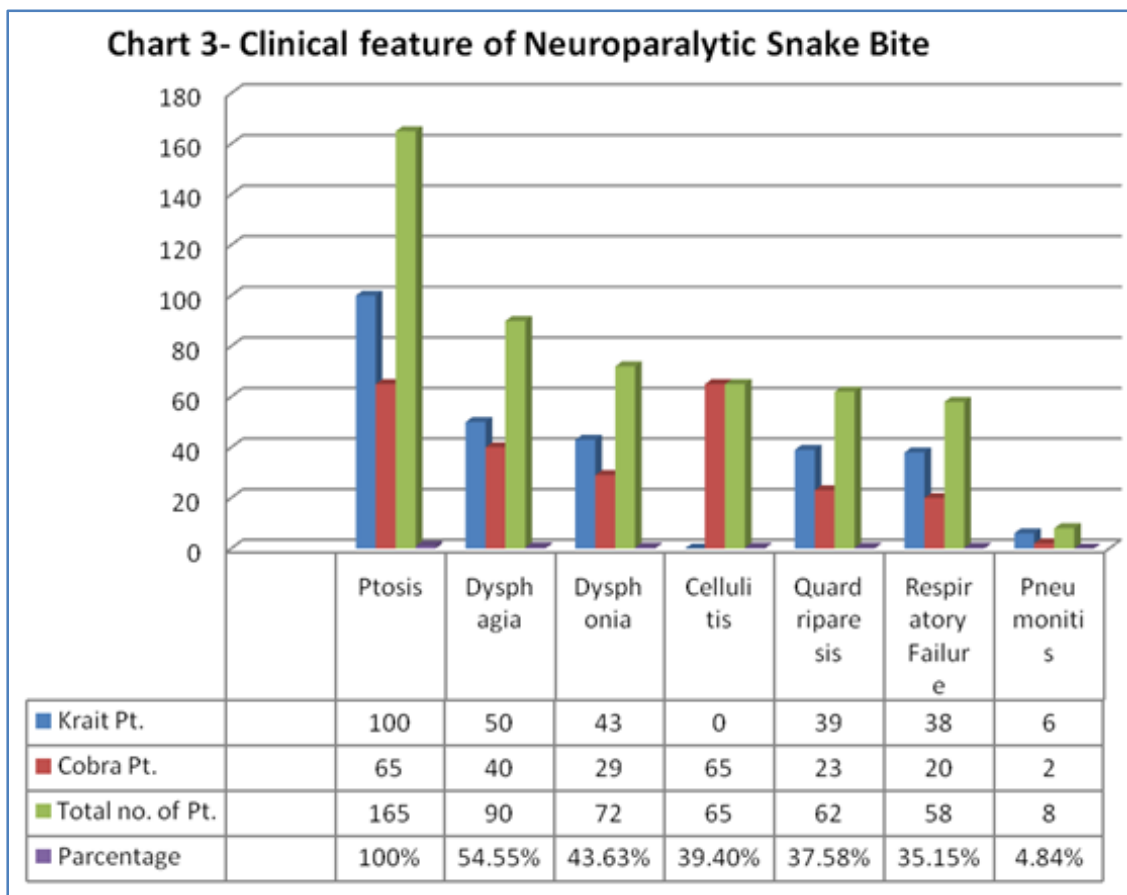
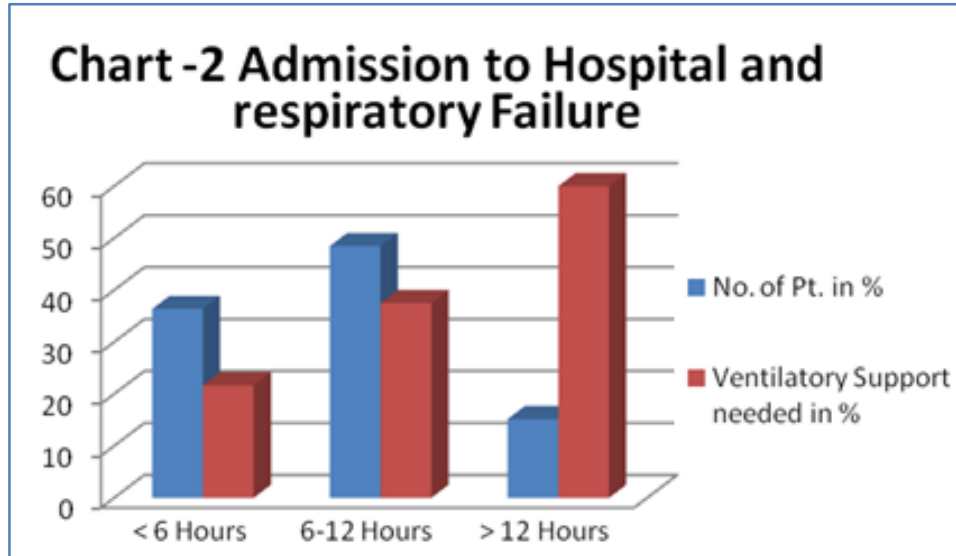
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